Lamp Factory Notebook, N-86-07-07

This notebook covers the period July-September 1886. All of the entries are by Edison. The name of John F. Ott appears frequently as a witness. The book contains notes, drawings, and calculations relating to lamp experiments. The lamps are numbered 21 through 158. Loose pages containing the results of lamp tests have been pasted onto many of the notebook pages. The spine is labeled "29." The pages are unnumbered. Approximately 250 pages have been used.

XE-172 N-86-07-07

N021 July 7 1886 TAE J. Tate

Regular unmarked lamp
put on water pocket pump
This lamp was not dried, ~~the~~
immense quantities water given
off so it gave CO every time we
heated filament, no mercury
shown on small spectroscope
but exceedingly strong CO in
halo — no blue on globe or if any
very faint — concluded got a
vacuum — burned it for while
had to take it off — put on
a cleaned & dried lamp —
The filament of lamp taken off
badly blackened

No 22. July 7 1886 7 P.M.

Washed & dried Regular —
poured gasoline in other
put on Regular pump —
lighted filament & run it almost
instantly to 50 candles before
tube was quite solid — large
amount of air came out —
probably H from decomposition of
the gasoline —

Even after burning for an hour very
fine pin head of air came off —
sealed it off although microscopic air
bubbles coming off
globe tinted, carbon browned on one
side. after 24 hours filament
vibrates ¼ inch & seems to rest
in 45 second —

No 23 — July 7 1886 P.M.
J.E.W.

Dried & cleaned Regular
Martin cleaned Lamp —
put it on Gockel's pump
to take place of No 21 —
filament oxidized & blackened
badly showing water — The
Chloride Calcium used for a
drier in the pump shows no
signs of water. It's probably
no good and phos anhydride
is requested,

No 24 — July 7 1886 TOQ
J.S.W.

Washed & dried Regulator — put thimbleful of Carbonate Potassium in globe. got vacuum heated $KClO_3$ and gave off dots gas, heated filament globe very blue with mercury so strong could scarcely see CO_2 with little spectroscope, stopped heating $KClO_3$ when it ceased giving off gas got solid tube, burned lamp quite high 80 cp for 10 or 15 min Removed Current Clamps clean — Shine Very strange to say dont seem to be taken off — No blue on clamps globe clear — after 24 hours filament [illegible] comes to rest in about 4 seconds Scale [illegible]

J. S. Ott July 7 1886 708

25 – Washed & dried Regular
put on Regular pump got vacuum
broke it & took off lamp – then
took smaller tube & put phos acid
down through it to bottom of lamp
a very little got on side globe –
heated globe to make it stick to
bottom, then put it on regular
pump — heated this with kerosene
for several mins gently got
solid tube & broke it from time to
time instantly pulling plug
run it for 20 mins with solid tube
no Kerosene or Current then put
on Current & broke tube, very
little air Comes out each time
allowed it run for 20 mins no current
then Concluded break it – Removed
Current, let it burn 10 mins at
50 cp — Concldt break tube let it
run for 10 minutes, Hg this went
away lamp became white no hab
Clamps dirty – Shine not affected
slight brown film near clamp – a short
[illegible] time cap
[illegible]

after 24 hours filament vibrates 3/8.
of inch & continues for one minute.

Cracked.

26 – J. F. Ott July 7 1886 T.A.E.

Washed & dried Regular
put tube down & forced small
quantity size pea phos anhydride
to bottom, a little stuck inside
globe; Then heated globe make
phos anhy stick to bottom of
Lamp – put it on Water pocket
pump; Thro pump had some
phos anhy put over the chloride
Calcium — heating lamp
gently with Kerosene, Keep it
exhausting while so heated. brought
Carbon to dullest red for 1/2 min –
Keep 1st peg in on 2nd Current for 10
min – been heating for 1/2 hour with
Kerosene with solid tube to give plenty
Charge for phos anhy in globe to
absorb the water vapor – The small pieces
of phos anhy dropped down partly on
side globe partly in full tube where

J. S. Otto

it become viscid – probably some
Volatilized & then brought lamp
up quickly to 16 candles it
discovered considerable air
came off – then heated it to
80 cp – considerable air came
out. The globe is very blue
from Mercury Vapor where did
it come from ——— Cant get rid
of Hg blue on globe – its very strong
Cant break tube, allowed it burn
10 mins at 80 cp sealed off –
globe slightly tinted filament
browned both sides – very slight
Volatilization Phos only in bottom
globe. Lamp dirty. –
after 24 hours filament vibrates
& comes to rest in one second –

Seal Cracked

No 27. J. S. Allen

Washed and dried Regular

3/4 hour and dried — Then with Carter tube put 1/2 thimbleful phos anhydride at bottom of lamp — same treated oxide, just little bit got on inside part between clamps — put on long fibre & got most of it off — heated lamp underneath to Saffron & stick phos anhydride to glass so it wouldn't drop down — put it on a Regular pump with Kerosene lamp under bulb — it got a solid but very quick — on first current 9 put 1st plug in which is 4@5 plugs less than red & keep pump going with solid tube this current & Kerosene for 1/2 hour — put it on 2nd peg at 3.26 pm. It didn't break tube but there are small pin heads coming down all the time but few in number after running gradually to 4th peg & dull red run it up quickly

J. S. M.

to high cp great deal gas came off but made minute it all went + couldn't break tube even by one second, guess there was true air + not water,

Shine all right — globe very blue no halo. Lamp clean. — filament much bent, clamps not clean phos acid stuck to bottom none went on side — after 24 hours filament vibrates $\frac{1}{16}$ + comes to rest inside of 2 seconds Seal Cracked

J. T. Tate

General Experiments - July 10 1886

Tag

Carbonate + Bi-Carbonate dry ground up with pyrogallic acid absorb Oxygen from the air use this in pump —
Carbonate is better than Bi-Carb —

Phos Anhydride can be kept + moulded in any shape under gasolene + of course almost any Hydro Carbon —

Tested cleaned Lamps after going through washing with Bichromate of Potash + SO_4 + distilled water - faint traces SO_4 with Chl Barium but second boiling + washing with distilled H_2O got rid of it entirely =

July 10 1886
TCR
J. T. Ott

Mercury is attacked by Sulphuret of Palladium - perhaps it wont be dry - Can use this substance in pump to absorb Hg Vapors -

Aug 21 1886 TAG

28 — started 1150. 2½ lb Hg pump
slowest pump yet. Lamps washed
by Martin on 12 of Aug hand until
today 21 Aug. with Cork in had
previously been washed in Bichromate SO4
+ rinsed regular way — 3 part
Phos Acid in Exhaust tube & made
regular contraction both ends of
it. — Heated lamp while Exhausting
by Kerosene — Lamp — Took it off
at 3 o'clock worked it up very
slowly then burned it for about
hour at 80 cp — quite blue in
globe, ~~Lamp~~ didn't remove gases
one side somewhat brownish
other side very shining clean
side that col brownish is dull red
other pretty clean — globe
carefully tested in irregular
globules

8/21/861 No 28

V - Amp - Res - Filks - lamp - Cal
102 - .85 - 120 - 3849 - 867 - 187 " 16
184 - .122 - 109 - 7211 - 457 - 866 " 80

ad - 40 70 190 313
of - mm - mm - mm - mm
80 - 78 - 72 - 62 - 50

Minutes' heated 600

Bulb very black one
Clamp black
Vacuum good

Aug 21 Tried running lamp off on vacuum Regulator then breaking vacuum & testing sides of globe for transparent film - didn't get any but another lamp on run off regulator but burned it for about 40 minutes at 80 & got blackening in blotches. This came off in flakes quickly with HCl - Could not dissolve it with HCl + Nitric acid together or on addition of SO_3 - on heating. Either there was a very transparent film on first lamp that Could not be seen which was Silica from the ash or the film is a Compound formed by H O + the Carbon which compound is not thus attacked

Aug 21 1886 — J. Ellis

No 30

Put solution of permanganate of potash on globe & evaporated water leaving a film. run it regular & then allowed it to stay on pump hour at 80 cp about globe blackened in very conspicuous blotches. certain places show absolutely no blackening — No Curve

8/20/86 No 80.

V — amp —	Ro — Ellis —	temp W.B.	e.p. W.B.	e.c.p.
95 — 80 —	122 — 8457 —	9.07 —	100 "	16
129 — 112 —	110 — 8371 —	8.18 —	614 "	80

set — 20
off — min
Bo — 68.

Arc'd in 20 min.

J. S. Elk

29 – Slow pump – phos auf in tube + bulb – got vac then heated it up & got all air cooled out + then power stopped got good vac + sealed off – heated me sude partially by Kerosene Lamp –

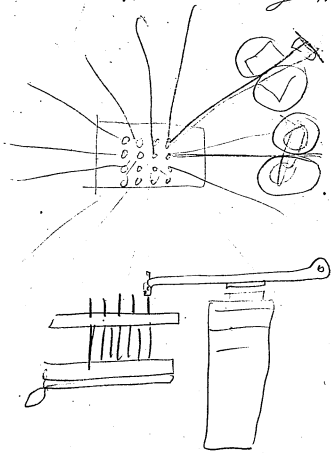
8/23/80 | No. 29

r – amp –	Res –	Filts –	Lamp	a.c. HP	a.c. HP @ a.c. P
113 – .11 –	157 –	0451 –	9.57 –	153 "	16
143 – 1.03	140 –	6372 –	0.01 –	401 "	80

act-
amp
80.

Arc'd in 20 minutes

J. F. Otto
Aug 24. 86



T' THIS IS THE

22 Aug 1886

31 Solution of pyrophosphate Soda - washed in regular way with Bichrom K + SO_3 common + distilled water then the distilled water containing the pyrophosphate - a little Solution touch Carbon + clamps dried on drier -

$13\frac{1}{2}$ pump — filament slightly grained both sides having received current. globe slightly tinted more near clamps - one clamp nearly melted -

J. T. Otto

· globe not so very black for the life - rather less than average - clamps clear

No 32 —

Same as 31 Except used

Solution of Nitrate ammonia —

Clamp method — try

another —

J. O. Otto

8/23/86 No 33

Clamps — Res = Ohms — Amps — C.P
M.P. — A.P & C.P
104 — .73 — 142 — 3362 — 9.82 — 137 — .16
137 — 1.03 — 133 — 6258 — 5.29 — 923 — .80

sec — 40 — 80 — 160 — 250 — 430 — 705
cp — min — min — min — min — min — min
80 — 66 — 62 — 55 — 50 — 44 — 40

950 — 1250 — 1425 — 1575 — 1715
min — min — min — min — min
39 — 32 — 30 — 30 — 29

Minutes to last bid 2005

globe brownish black
clamps clean.

33 — J. T. Hitt

Same as 31 — except

Solution Chloride Copper —

Very slightly blackened — globe at first white afterwards got quite blue — probably Chloride decomposed

bulb clear except slight Copper faint deposit down by clamps.

Clamps clean but dull —

8/12/06 | 1½ 3 V

V – amp – Ra – Tilto – lamp
102 – 1/2 – 141 – 3230 – 10.21 – 4.0 – 0.0
132 – 1.05 – 125 – 6149 – 6.37 – 4.0 – 163 – 16 @ 88
132 – 1.05 – 125 – 6149 – 6.37 – 4.0 – 490 – 80

aff – 40 – 60 – 180 – 220
mp – min – min – min – min
N – 78 – 62 – 52 – 44

Minnis called 3.25 –

34 – Same as 31 except Sesqui – J. T. Tilto
Chloride Chromium with
little prot. chl Chromium
= Sesqui dont seem dissolve
but fine powder – Lamp bulb
good vac filament dull brown
on one side – removed
Current. clamps clean but
dull –
Blue bend globe – one side
filament not dead
black – clamps clean

9/23/96 No. 35

V - amp - Res - Filth - lamps 0.12
106 - .72 - 147 - 3362 - H.R. - H.R. @ 0.1.
138 - 108 - 127 - 6571 - 9.82 - 157 " 16
138 - 108 - 127 - 6571 - 5.01 - 401 " 80

Ref 40 80 130 170 430
mp - min - min - min - min - min
80 - 78 - 68 - 56 - 48 - 39

Minutes Lacket 5 00

35 = Same as 31 except
perchloride of Antimony in
water = solution rather
opalescent =
clamps clean - filament
seems unbrowned either
side. Globe just shade
tinted

Globe Ordinary block
Clamps clean
filament dead black

36 — Same as 31 — J. F. Ellis

glacial phos acid —
Solution got on carbon &
Clamps —

globe clear filament
pretty shiny - clamps
moderately clean.
nothing else noticeable.

8/25/86. 11 0 86. lamps C.P.

V	amp	R	Watts	Watts	watts @ C.P.
105	.73	144	8406	9.70	185 = .16
106	.105	129	6826	8.22	418 = .80

	40	80.	130	250
cp	mm	mm	mm	mm
W	74	63	67	40.

Minutes tested 250.

only moderately black
globe clamps clean

37 — Same as 31. J. E. Otte

Potassium Nitrite —

Solution allowed it to get on Carbon + clamps and — hard getting it off pumps deposit quite large on glass — will try a weaker solution —

Busted

8/24/861 No 38

v – amp – Res – Watts – lamp H.P. C.P

107 – .76 – 140 – 3878 – 9.17 – 147 " 16

140 – 1.12 – 125 – 6946 – 4.75 – 350 " 80

at 30 60 120 235

up – min – min – min – min

80 – 75 – 73 – 58 – 40

Manila Lasted 230

38 Same as 31 – J. F. Ott

Pyrogallic acid + [redacted] Potash solution dilute get it on clamps v carbon

& [redacted] used as much as if it had been running 300 minutes due to action of O on Pyrogallic – filament only slightly of any brownish about same color filament dead black –

39 Same as 31 — 23 158 1886. —
J. T. Otto

Chloride Magnesium

string got it over clamp post

Carbons — The mercury

pump stopped & phos anhy

flew up into lamp — stopped

for the night — let lamp stay

on pump — at 9 am 24th

started pump again

almost impossible get vac

vac even after 2 hours bad

phos anhy all viscous from absorbing

of water probably from Chloride

magnesium fulminet

Browned clamp moderately

Clean — globe clear except

white deposit

8/24/86 No. 89.

V- amp- Res. Filth- lamp 0.0
100- 76- 143- 8573- 6.0- 1.12 @ 0.10
99- 100- 129- 6636- 9.21- 147 " 76
aft
op:
80

Ow'd in 20 minutes.

Aug 23 1886 J.F.O'B

40 — Bromophide Carbon

unmounted lamp — put it on pump — ~~the~~ pump stopped ~~bro~~ phos anhy jumped into lamp — let it remain on pump but with an opace all night ~~started~~ at 930 on 24th —

almost impossible get vacuum — finally got fair one — one side filament browned — globe little browned in spots phos anhy melted in little spots — lamp clear

not absolutely pure this is Bi Sulphide

globe clear

one clamp block
other clear —
filament block —

try again

24/1/06 No 42 D
V - amp - Ro - Title - lamp @ 2 H.P. @ E.P.
112 - .75 - 154 - 3497 - 9.44 - 57 " 76
133 - 1.10 - 121 - 6459 - 5.11 - 409 " 80
set 72 mm
up - mm - mm
80 - 58 - 50.

Minutes lasted 400

45 — unwashed — J. T. [illegible]

1/2 gramme dry oxide of ceriumin
almost impossible get
air out this lamp —
probably it decomposes
Clamps clean — very difficult
preventing them melting
one side, filament browned —
Blue having Curve Bulb
very little blackened filament
dead black — clamps clean

No 45 —
24/1/06
V - amp - Ro - Title - lamp @ 2 H.P. @ E.P.
112 - .76 - 134 - 3457 - 9.57 - 133 " 76
133 - 1.10 - 121 - 6459 - 5.11 - 409 " 80
set 72 mm 130 mm 260 mm
up - mm - mm - mm
80 - 72 - 57 - 89

Minutes lasted 280

46 — Unwashed Lamp — J. F. Ellis

Amorphous phosphorus — 1/4 grams

Seems wet — Amorphous Phos

stands high heat without

Charge — Lamp works well

phos sticks in one place

Clamps very dark — filament

bright. bulb clean —

8/24/86	No. 46					
V — amp —	Rio —	Ellis —	lamps H.P.	C.P. H.P.	@ C.P.	
97 =	.72 —	135 —	3097 —	10.67 —	171 "	16.
127 —	1.00 —	127 —	0818 —	0.87 —	470 "	80

act 50.
np — min
PO — 78

Mynzani

Minutes lasted 145.

filament only browned — globe
that cloud but brown slight
Brown

J. S. Pitts

No 50 — Unwashed lamp —

1/2 grammes dry Iodide Lead

Kerosene Lamp used

Iodide Lead Valadlyzed

without decomposition

globe very yellow almost

opaque. can't see slate

flume — came off

Vac very easy

8/24/86 No 50

V-amp - Ro - Fitts. lamp C.P

H.P - H.P @ C.P

124 - .87 - 143 - 4777 - 6.91 - 111 " 16

149 - 1.14 - 181 - 7021 - 9.39 - 193 " 44

Alt - 40

Alp - min

Az - 40

Minutes - Cracked 70.

52 Unmounted Lamp J.S.M.

Dry peroxide Barium 1/2 gramme — heated with Kerosene — filament OK

works well on pump —

~~Exactly~~

8/24/86 No. 52

V.	amp	Res.	Watts	Lamps C.P. HP	HP	@ C.P.
110	.77	143	3710	8.92	143	" 16
141	.115	125	7344	4.49	363	" 80

det	70	180	390
4C	min	min	min
80	56	48	37

Minutes lasted 575

Scarcely any blackening of Globe
Clamp dirty filament dirty
Block

27½ — J.S.M.

Washed Regular - this
Solution Nitrite Potassium.
(not sure) may be Bi Sulf Carbon but
think not — forgot to Number it.
filament bright — lamp —
incandescent fringes near clamps
clamps dirty —

1/24/86 — No 2 1½

Oxidized before reading
could be obtained,

Cracked — Seal

8/20/80 No. 41

V	amp	Rs	Watts	lamps	a.p.		
					M.P.	M.P. @	a.p.
103	.73	141	3318	9.95	157	"	16.
135	.105	129	6292	5.25	420	"	80

act	80	150	240	
ap	min	min	min	
80	71	52	38	

Minutes to lasted 815

very little black for the life much below average: fil black

41 — unwashed Lamp J.F.H.

Oxide Magnesia 1/2 grammes dry

filament slightly brown

very difficult get off pump hard keep clamps from melting — very

blue Hg clamps

very clean

globe clean

J. S. Mc

42 — Unwashed Lamp

Hyperox. de Barium

$\frac{1}{4}$ gramme —

Broke first one made second

filament slightly bowed

one side very difficult

Keep from Melting clamp

Globe clear

8/24/86 No 42

V.	amp.	Res	Watts	Lamp C.P. / Lap C.P.	C.P. / Lap C.P.
98.	.72	136	3141	1052	168 .16
128	.101	126	5707	5.78	462 .80

Sat	50	150	260	460	770	940
4	min	min	min	min	min	min
80	76	60	50.	42	33	30

Minutes lasted 1075

globe very little blackened

Clamp clean not so much

blackened as 51

J.S.Pb

43 — Unwashed lamp

Burate of Pyrata.

1/4 gramme —

globe clear — filament

bright — very diffuse

present clamps melting

8/24/86 No. 43

V —	amp —	Ro —	Watts	Watts HP	C.P. HP	C.P. @ C.P.
99 —	.73 —	136 —	3185 —	1036 —	166 —	" — 16
130 —	1.03 —	126 —	5928 —	557 —	446 —	" — 80

Sec	50	150	260	460
Ft	min	min	min	min
80	68	50	38	36

minutes lasted 545

less than ordinary blacken

of globe clamps clear

inside filament not dis

black —

57 – unwashed lamp J. F. M.

fluoride calcium
$\frac{1}{4}$ gramme –
filament broken one
side – clamp clear
globe clear don't work
well on pump –

8/24/86 No. 51

v – amp – Res – Watts – lamp O.P. H.P. – H.P. @ C.P.
101 – .76 – 133 – 3406 – 9.70 – 155 – 16
130 – 1.10 – 118 – 6326 – 5.22 – 418 – 80

ref. 30 120 260 460 770
up – min – min – min – min – min
80 – 76 – 56 – 48 – 45 – 34

Minutes lasted 820

globe only little blackened
Best yet except the 3100 minute
lamp. There are spots where there is
no blackening –

47. Unwashed lamp J. S. Ills

arsenate antimony

1/4 grain only

no blue in globe –

dirtiness fall tube –

Clamps dark drab –

bulb slightly tinted mar

Clamps filament

bright –

globe only moderately

Cloudy clamp clean

8/24/86 1 Ro 47 Lumens C.P.

V – amp – Ro – Watts – 1.25 – 44.0 @ 0.10

109 – 175 – 152. 0628 – 9.09 – 165 " 16

192 – 109 – 180 – 6057 – 4.84 085 – .80

ref – 30 150

ref – min – min

80 – 78 – 67.

Minutes – lacked 150

[illegible]

J. S. Oh

44 — Unwashed Lamp

Oxide Copper —

hard get off pump.

Very blue from Hg

one side filament

slightly blackened

8/24/86. No. 44

V.	amp.	Res.	Watts.	Lamp H.P.	C.P. H.P.	C.P. @ C.P.
100	.70	143	3097	1467	171	16
131	100	131	5795	569	455	80

Set	50	150	260
Op.	min	mins	mins
86	70	52	41

Minutes lasted 365

globe black perhaps above ordinary —

8/24/86 No 48

V.	amp.	Res.	Watts	Lamp Watts	C.P. Watts	@ C.P.
101.	.74	136	3318	9.94	159	.16
130.	.105	114	6061	5.45	436	.50

def.	20 min	150 min	250 min	350 min	660 min	880 min	980 min
80	73	60	52	44	34	24	30

Minutes lasted 1160

globe very black
fil black – clamps
Clear

J. S. 1886

48 – Unmounted Lamp

Sesquioxide of Iron

Enormous amount of gas
Comes off when heated by
Kerosene Lamp –
Clear globe – clamps
Clear although
burned high for 1/2 hour
both sides filament
shining –

[illegible]4/96/[illegible] [illegible] 63.

v- amp- 180 - [illegible] - [illegible] - [illegible]

96 - 70 - 137 - [illegible] - 1113 - 178 - 16

125 - 116 - 118 - [illegible] - 5.61 - [illegible] - 80

[illegible] 20 . 150 . [illegible] . 350 . 66 . 230

[illegible] - mm - mm - mm - mm - mm - mm

70 - 72 - 40 - 36 - 32 - 22 - 20

250 mm - 120 mm × mm.

19 - 16.

Mumitis lasted - 1475 -

Black globe clamps good
Clean filment dia
bright -

63 - Unmounted Lamp

J. F. [illegible]

Ferricyanide Palladium
$\frac{1}{4}$ grammes

filament badly distorted
little hard to get off
pump globe slightly
tinted one side
filament ~~twisted~~
~~or~~ Grooved -

J. T. Litt

49 – Unwashed Lamp

Chloride Ammonium

Dances & volatilizes in

Lamp with Kerosene Lamp

but doesn't hurt vacuum

in least

filament dead black

too much frosted

no good

8/24/88 No 49

v –	amp –	Ro –	Watts –	lamp	C.P.	C.P.	C.P.
				16			
117 –	.74 –	158 –	.8649 –	8.57	– 107	–	16
149 –	.112 –	133 –	.6688 –	6.16	– 361	–	70

set
up – 20
90 – 7

Minutes lasted 60

8/24/26 No 54'.

V- amp- Res- Watts- Lamp C.P. = H.P. - H.P. @ C.P.

97- .98- 124 + 336 2 - 982 - 157 + 16

127 - 1.11 - 115 - 6238 - 529 - 423 + 80

age: 20 50 140 260 570 700 591

hr - min - min - min - min - min - min - min.

80 - 80 - 72 - 64 - 58 - 48 - 45 - 44

Minutes lasted 1060

64 — Unwashed Lamp

— J.S. Clk

Iodide Potassium

clamps clean — of Salt

heated well by Kerosen

Lamp work off easy

bulb clear filament

Shining

This lamp is returned as

54 — These Gang two 54 —

but thinks it is 64 —

Not a bit of blackening

There is a light brownish

Coloration like the 52 hour 80 c/p.

Lamp filament block - clamps

Wonderfully clean —

This is on right track probably

due to the Iodine gone off

when KI heated —

J. Fitts

62 – Unwashed Lamp
Permanganate Poisson
and – several arcs
formed in Lamp
before one jumped

N. Clark

Busted

61 — Unmounted Lamp — Filth

Sulphuret Calcium

globe clear - works well

on pump filament

slightly browned

Clamps black

8/24/84 No 61

V - amp - Ro - Filth - lamps. O.A H.A = H.A @ O.A

103 - .73 - 141 - 9331 - 9.94 - 159 . 16

134 - 1.06 - 126 - 6282 - 5325 - 420 .. 80

ref -

op - 20 min - 20 min

90 - 84 - 72

Minutes burned 120

globe slightly blackened

clamps black - filament black

J. F. Pitts

60 — [illegible] lamp

Cyanide Copper
globe Grooved
Considerably hard
to get off — spot in
it — filament
Grooved one side
clamps clean

8/24/86 | No 60.

v — amp — Rs — Watts — lamps C.P — W.P. — W.P. @ C.P
105 — 73 — 144 — 5406 — 9.70 — 155 " 16
137 — 105 — 130 — 6371 — 5.18 — 414 " 80

set — 20 — 30
up — min — min
80 — 72 — 58

No Clock on
yellow — one side
filament moderately shining

Minutes tested 50

59 — Unmounted Lamp

J. S. Mills

Oxalate Copper -

filament browned

slightly one side

burned bright for 3/4 hour

globe clear - one clamp

yellow like gold

others not very [illegible]

8/24/86 No. 59

V - amp - Ro - Watts - lumens C.P. H.P. - H.P. @ C.P.

100 - .79 - 127 - 8495 - 9.44 - 157 " 16

130 - .112 - 116 - 6937 - 5.11 - 409 " .80

Ret. 20 30 50

mp ÷ min - min - min

80 - 72 - 66 - 58

Oxid in 125 minutes.

57- Unwashed Lungs J.S. Otto

Tartrate antimony
Impossible get vac
after 2 hours
and —

OK

Busted

J. S. Pitt

56 — Unwashed Lamp

Litherage

globe clear - filament
OK — had take it
off pumps & then
made power stupid.
Lamp clean -

8/25/96 No. 56

% amp. - Res. - Watts - lamp - U.P. - U.P. @ 2.5
105 - .75 - 140 - 3495 - 9.44 - 151 .. 16
136 - 1.05 - 129 - 6326 - 5.22 - 49.8 .. 80

set up - 20 min - 40 min - 60 min - 120 min

PO - 74 - 66 - 62 - 48

moderately blackened globe

Number labeled 140

J. S. Pat

55 Unevacked Lamp

Acetate Alumina

yellow residue — globe

clean clamps ditto

filament browned

both sides — distorted

8/24/861 No. 55

v — amp — Res — Watts — Lumens C.P.

H.P. H.P. @ E.P.

111 — .70 — 159 — 3457 — 9.57 — 15.8 " 16

147 — 1.04 — 141 — 6769 — 4.88 — 890 " 80

alt

ny —

PD

Acid in 10 minutes.

arcd

8/24/86 11 a.m. 58

V - amp - Ro - Flbs - lamp H.P. - C.P. H.P. @ C.P

101 - .70 - 144 - 3141 - 10.52 - 187 - 16

130 - 1.00 - 130 - 3.37 - 3.74 - 439 - 80

act.
up - 20 min - 50 min - 140 min

50 - 40 - 38 - 30.

At 50 min. deep, clear blue on * clamp

Avoid in 185 min.

J. T. Hs

58 — Unwashed Lamp

Chlorate of Potash globe clear one clamp black other not clear

Chlorate melted —

Came off hard —

slight brown on globe near clamps

one side filament browned near clamp

J. F. Mc

53 — Unwashed hemp

Arsenide Cadmium

too much in globe

blackened absolutely

opaque — neg

Busted

82 – Unnamed Camp

Cinnabar – arcd –

Posted

70 Unwashed lamp

Mercuric oxide

acid on pumps

54 – Unwashed Lamp

J. E. Ott

Metallic Ti – powder

White Deposit on bulb

comes off – very little –

air comes off – globe

white except at bright

candle than little.

Blue only works splendidly

on pump filament.

bright both sides

Cathode perfectly strong it

8/25/86 | 10 5½

v	Amp	Res	Watts	Lamp C.P.	H.P.	H.P. @ C.P.
104	.79	132	3650	9.04	1.48	.16
135	1.13	120	6750	4.89	3.91	.80

Def.	40	130	300	450
Up	min	min	min	min
80	72	50	42	37

Manuals tested 600.

pretty block

69 – Not Washed Lamp

Nitroprusside Sodium

globe little tinted

filament not perfectly

J. S. Otts

8/20/86 No 69

V – amp – Res – Flth – lamps A.P. H.R. HR @ C.P.

106 – .76 – 140 – 85.75 – 9.25 – 148 .. 16

107 – 110 – 125 – 66.75 – 4.94 – 395 .. 80

ret – 40 130

rep – min – min.

80 – 80 – 38

Minutes lasted 150

Worth an reg

flocking clamps

clean –

68 — Unmounted Lamp
J. S. Vitz

Tungstate Soda
~~blo~~ Bulb Clear Carbon
Shrinking — Comes off Easy
Lamp clean —

8/25/86 No. 68
V — amp — Res — Watts — Lamp C.P. — Watts @ C.P.
100 — .72 — 13.9 — 3190 — 10.35 — 166 — 16
130 — 1.02 — 12.8 — 88.3 — 5.02 — 450 — 80

eff 40 130 300 480 690 900 1120
cp — mm — mm — mm — mm — mm — mm
80 — 72 — 56 — 48 — 42 — 36 — 34 — 32

Mounted tested 1190

Lamp about regular black
Clamps clean
fil dead black

75 Unwashed Lamp

Lead Chloride J. E. Ott

Incandescent works well on pump very little of any Hg blue —
Globe colored somewhat
Clamps clean — filament apparently showing bad sides —

8/25/86 No. 75

V	Amp	Res	Watts	Candle Power	C.P.	H.R.	C.P.
118	.71	159	8550	9.29	149	"	16
149	.64	144	6965	4.81	385	"	80

pet	40	60	
mp	min	min.	Incandescent
D	74	66	not much blackening

Mounts tested 85 -

81 Unwashed Lamp y.o.w.

Hydrobromate of Ammonia

Volatilizes before heated with Kerosene Lamp -

Cant do anything with it - fahrenheit moderately shiny - always dirty

8/23/81 No. 81.

v - amp - Ro - Fills - lamp - C.P. - H.P. - H.P. @ C.P.

9P - .74 - 133 - 32.25 - 10.23 - 164 - 16

12P - 1.03 - 125 - 5.950 - 5.55 - 444 - 80

act - 40 - 100

up - min - min

80 - 56 - 50

Which lasted 120 h.

74 — Unwashed lamp

Carbonate load

almost impossible get
Vac Imp char —
Clamps clean filament
black —

9/23/86 No. 74.

V- amp- Res- Watts- lamps C.O
H.P.- H.P.@C.P.
120 - .63 - 203 - .3575 - .428 - 148 " 16
149 - .58 - 192 - .5150 - .631 - 206 " 40

set 40 130 300 450
hp - min - min - min min
40 - 44 - 46 - 40 - 36.

Mean is tested 540.

less black than ordinary
white no spots clamps
clear

J.F. Ott

67 — Uniwitted Lamp J.S. Ott

Arsenias Potash —

bulb tinted — filament

black — worse [redacted] blacken

yet which on pump

hard to get off

9/25/81. No 67

V — amp — Ro — Ills. lamp C.P. U.P. W.P. C. C.P

107 — .78 — 138 — 8700 — 8.92 — 145 " 16

138 — 1.14 — 121 — 6970 — 4.73 — 378 " 80

eff — 40. 100

eff — min — min

81 — 82 — 86

Minutes burned 180.

blackened about Regular

filament dead black

8/20/86 No. 73

V – Amp – Ro – Ztho – lamp – C.P.
100 – 58 – 129 – 3465 – 9.33 – 4.P. – 4.P. @ C.P.
130 – 110 – 118 – 6558 – 5.20 – 416 – 195 " 16
at 40 – 150 – 300 – 430 – 690 – 930 – 1130
sy – min – min – min – min – min – min – min
50 – 74 – 56 – 52 – 46 – 38 – 29 – 38

1620 – 1960 – 2170 – 2490 – 2695 – 3530 – 3610
min – min – min – min – min – min – min
31 – 30 – 28 – 26 – 25 – 20 – 2

Munich Packet 3785.

Pretty block clamps not very clean – The block has a yellowish caste, think great deal of it due to dirty effect of movement of the loose lamp block Vac good –

73. Unmounted L

p. 5 Otto

Lamp block

Comes off very soon

clamps mod clean

filament burning

globe tinted little probably from lamp block little yellow in narrow part globe probably a Hydrocarbon for lamp block

66 — J. F. Otto

acetate lead —
No good too much water
busted on J. F.

Busted

80

j.s.Ott

Sulphate Ammonia
Too much water in it
my busted acid

8/25/96. No. 79

V - amp - Res - 7 lbs - lamp. H.P. C.P. H.P. @ C.P.

98 - 50 - 123 - 5.175 - 950 - 152

126 - 1.14 - 1.11 - 6.375 - 5.112 - 4.15 " 16

" 20

rel. 60 - 230 - 350 - 620 - 870 - 1060 - 1650

my - min - min - min - min - min - min - min

P - 81 - 64 - 52 - 42 - 41 - 34 - 32

Wanita - backed 1,900.

quite black - full dead black

Clamp clean

79 - Unmounted lamp

Ferrocyanide Potash

bulb clear clamps

clean - filament very

slightly burned lower

part inside -

burned high for over 1/2

hour -

globe not nearly as

black as it ought to be

for this life — filament

deadblack - Clamps clean

g. 5 lbs

72 J. F. Ellis

Bichromate Ammonia
Bulb clear impossible
get rid air – salt
swells up enormously
& continually gives off
air – [illegible]
dead block – burned it
3/4 hour in pump

8/23/86 No 72
V – amp – Res – Flits – Lamp à.P
1.10 – 1.12 – 1.12 C.10
111 – .81 – 137 – 3990 – 5.27. 13 z .. 16
142 – 1.12 – 127 – 7050 – 4.68 – 374 .. 80

act – 60
up – min
80 – 90

Lamp ordinary
blackened bulb –

Minutes lasted 110.

J. F. Ulb

16 Sorgy Platinum

globe family twisted — little browned in narrow part — filament even but not perfectly shining wks easy on pump clamps clean —

4/25/10 4 86

V —	amp —	Ro —	Watts —	Candle Power —	HP —	HP — @ — CP
102 —	78 —	131 —	3525 —	936 —	150 —	n — 16
132 —	112 —	118 —	6550 —	500 —	408 —	n — 80

Set	60	230	380	620	870
Hr.	min	min	min	min	min
80	77	56	48	38	35

Minutes lasted 1030

Globe very black
fil dark black
Clamps clean

Unwashed J. F. Ott

83 — Iodine — about 2 milligrams

whitening near clamp from formation iodide Cu filament showing globe clear works very easy on pump — No blue in globe — fall tube not stopped but deposit takes place —

8/24/90 No. 83 —

V —	amp. —	Res. —	Watts —	Lamps H.P.	Lamps H.P. @ C.P.
99.	.75 —	132 —	5300 —	18.00 —	160 — .16
128 —	1.05 —	122 —	5945 —	5.05 —	444 — .80

set	90		
up —	0min —	110 min —	260 min
80 —	76 —	71 —	60

globe slightly blackened or rather black brown — filament black clear — clear filament quite white near clamp

Minutes tested 910

8/22/86 No 78

I –	amp –	Res –	Watts –	lamp	C.P.	watts	C.P.
100 –	.50 –	125 –	3550	–	9.29 –	169	" 86
150 –	114 –	114 –	6400	–	5.12 –	410	" 50
adj.	40	80	260	580	760	940	
sp. min	min	min	min	min	min	min	
50 –	76 –	64 –	56 –	45 –	40 –	35	

Number lacked 1325.

globe rather black
one clamp clear other
Carbon black – filament
black –

78 — J. S. Pike

nothing in globe
but there are about 2
milligrams Iodine in
among phos anhydride
in Cup – want to see
if Lamp get blue –
Lamp free of blue
works off beautiful
hardly any on clamp
dull brown filament
shining

84 — J.F.W.

10 grammes Selenium
globe gives most beautiful
Coloration I ever saw —
Clamp lead Color
works Easy on pump —
no blue — flame
slightly Crimson one side

8/25/86 No 84.

V. amp	Res	Watts		lamps		H.P.	H.P.	0.10
112	80	140	3975		8.30	133		16
148	116	128	7600		4.34	847		80

Selenium further
Valuated to deep red

Minutes burnt 10

8/25/84 Wz 65

V	Comp.	Res.	Volts	Lamp H.P.	L.P. H.P.	O.C.P.
108	72	150	3445	.959	153	.16
139	104	134	6400	5.15	412	.80

det	40	110
4h	min	min
80	92	70

Minutes lasted 130

Globe more from ordinary black but got 1/2 out I guess

65 — J. F. Otis

Nothing in globe put on pump when there are 2 milligrams Iodine — Phos Cup

Hg blue in globe — Iodine probably got covered up — globe clean

Chamber rather clean filament little darkened —

8/23/06 W.O. 77

V – amp – Res – Watts – Lamp C.P.
102 – .74 – 138 – 5330 – 9.95 – 158 " H.P. @ C.P.
132 – 1.03 – 127 – 6025 – 5.64 – 458 " 80

Life 40 – 110 – 260 – 530 – 760
% – min – min – min – min – min
80 – 80 – 74 – 64 – 44 – 38

Minutes lasted 820

Brownish black – about
regular amount
clamps slightly dirty
filament bright from clamp
to 1/2 inch up on side that
broke —

J. F. Ott

nothing in Lamp —
new pump with 2 grams
iodine right on top
Phos anhydride – Cup
no blue in globe – little
whitened near clamps
Clamps showing tendency
to melt run filament
way up above regular
Clamps not clean
filament perfectly shiny
works at 800 no air
or at least hardly any after
red heat & then very little.

8/26/86 No. 83

V. amp. Ro Filla ~~Lamp~~ ~~HP~~ CP HP @ CP
107 - 72 - 149 - 3406 - 270 - 155 - " - 16
138 - 103 - 134 - 6282 - 525 - 420 - " - 80

Set 30 60 90 120 180
off min min min min min
80 80 78 72 68 58

Minutes lasted 350

Globe black clamps
moderately clear filament
black

83 — J. F. Ott

Nothungri Lamp - put on drier for 20 minutes & heated - then put on pump with piece Iodine about 2 mg on top phos anhy in Cup — globe clear no blue - Can run filament up very high without fear melting clamps - filament shining - clamps not cleaned

J. F. Ott

Dried on drier with heat then taken off and a solution say 20 drops of Gasoline with Iodine dissolved in poured on lamp while hot & put on pump —

It worked very easy scarcely any air came off got a vacuum in few minutes, but on allowing it to turn air came out — also notice faint blue halo on clamps although globe white white & free from blue; strange to say while the globe is white at high Cp — The blue halo shows Mercury strong — may be decomposition of Iodide of Mercury decomposed & then recombined clamps gradually become clean showing either H or Co —

Blue on globe clamps dirty
filament shining been
burning 2½ hours at 30
Candles - slight browning
of globe - the shine is not
perfect on filament but
even all over -

8/26/86 No 71
v - amp - Rs - Watts - lamp A.P. - H.P. - H.P.@O.P.
96 - .78 - 124 - .5325 - 9.98 - 139 - 16
125 - .139 - .115 - .6030 - 5.45 - 436 - 80

set 30 60
sp - min - min
80 - 78 - .72

Mounts tested 200

globe black more than usual
for this life - one side fil
brown other dead black
Chimney clean -

10

8/26/86 No 109
v - amp - Rs - Watts - lamp A.P. - H.P. - H.P.@O.P.
94 - .82 - 113 - .5425 - 9.64 - 154 - 16
124 - .115 - .108 - .6325 - 5.22 - 448 - 80

set 30 60 270 470
sp - min - min - min
80 - 80 - 74 - 73 - 69

Mounts tested 200
Bromine globe - fine
Chimney perfectly clean

109 — J. F. Ott

Put on drier with heat taken off + a stronger solution of Iodine in Gasoline poured in hot globe — it absorbed it works same as 71 — Except by running up very high it flushed in blue — then blue came in for some time very small quantity air keeps coming off at about 30 Candles but stops when at 100 Candles — 1/2 hour + air comes out burning at 30 CP on running it up blue comes in globe strong showing not enough Iodine blue in globe but not much Except high heat — Green burning 2 1/2 @ 3 hours at 30 filament Shining + absolutely unbroken on chain clear other unbroken globe blued — air was practically stopped although pump other a micro-cupfer bulb attached

8/26/86 No. 96

V. – Amp. – Res. – Watts – Watts per C.P. – HP – @ C.P.
103 – 77 – 134 – 3495 – 9.44 – 151 – " – 16
135 – 108 – 125 – 6459 – 5.11 – 409 – " – 80
Start 60 150 210 390
4th min min min min
80 67 56 54 48

Minutes lasted 610.

Brownish black
moderate
one clamp. clean other
dirty fil dddblack

96 — J. S. [illegible]

Lamp not put on device about
1/2 the ~~[illegible]~~ filament
Gasoline put in globe &
put on pump with inside
all moist with the liquid.
This lamp has blue in burned
3 hours at 30 CP without
absolutely clean tube – then
I put it up for 20 minutes
to about 100 @ 125 – CP
filament shiny – globe
very faintly blackish brown
one clamp clean – noticed
when I pulled peg one clamp
white hot – other clamp
untouched. Wire on
inside not broken but fixed
rather phukey manner –

8/25/86. No. 91

4 –	avg.	Res.	Filler	Lamp	H.P.		
9P –	79	133	3225	11.23	164	→	16
12 –	118	118	6075	5.48	4.54	÷	90

act.	80	90	540	520	961	1350
avg.	min –	min –	min	min –	max –	max.
90 –	78	67	49	42	34	31

Shunt is labeled 1500.

Yellowish black (very marked) on globe fil dead black

Clamps clean

91 – Unwashed – Undried Lamp

put ¼ of size pin head Iodine on globe — when sealed the obtained piece had disappeared – blue on globe showing not enough Iodine – probably some reaction with water used at all up as the lamp was undried – blue on globe but no air out as in those that are not blue – This also had a halo that filled the whole of narrow neck of lamp – filament shiny – did not remove current – clamps not cleaned – globe clean

J. F. Ott

9/26/86/ No. 108.

V	amp	Res	Watts	lamps O.P. W.P.	W.P.@O.P.
112	.98	131	.3525	9.36	.150 n. 16
102	1.12	114	.6550	8.00	.410 n. 50

alt 30 50 340
up min min min
30 80 74 80

Minutes lasted 400.

globe regular block
no browning clamps
~~[illegible]~~ ~~[illegible]~~ ft. dead
black -

108 - unwashed - undried
J. T. Ott

Put in ½ pm head - Iodine
put on one of the pumps that
previously has Iodine in
Little blue in ~~globe~~ globe
shade of Hg -
Very blue - globe clear
filament bright. very
slight brown new clamps
clamps unchanged -

8/26/96 No. 99

V – amp – Res – Watts – lamp H.P. – S.P. H.P. – @ CP

105 – 80 – 132 – 8725 – 8.86 – 142 – 16

135 – 117 – 118 – 7150 – 4.61 – 569 – 50

pd 30 50 040
up – min – min – min

80 – 76 – 70 – 50

Minutes lasted 4.10

globe dark but it is nearly brown

clamps clean – fil dead black

99 – Unwashed – Undried.
J. F. O'B.

Full pin head of Sodium put on pump where Sodium had been before –

no blue or halo – no after air – clear tube comes off quite little white deposit down near clamps

clamps dirty or rather unchanged from original

took lamp off in 15 @ 20 minutes – filament bright –

8/26/86 No 110

V – amp – Res – Volts – Lamp Cap Hg Mt @ C.P.

98 – 78 – 126 – 3330 – 915 – 157 " 16

128 – 113 – 118 – 6420 – 574 – 411 " 80

Pot – 30 50 500 520

W – min – min – min – min

80 – 78 – 69 – 48 – 35

Minutes Lacked 765

Brownell block

Clamp clean fel had block

110 – Unwashed

J. F. Ott

Dried on drier without heat ½ to 3/4 pin head Iodine put in globe – put on pump where there had been previously a very slight amount Iodine – notwithstanding considerable iodine & a slight whitening near clamps globe is blue – must be there is Hg in drier & the quantity Iodine is insufficient to satisfy the whole –

The pump tube shows only small quantity of Hg – on turning up high clamps show lessening melt – vary blue – globe & stem are slightly tinted little white on underneath near clamps – plum & tarnish on the clamp – clean the tip & test pump –

106 — dried without heat on dri-
put couple crystals Iodine in
drier —
Put big gun cap full of
Iodine in globe & put it
on one of the old pumps
which is very much coated
in full tube with Hg I —

J. T. Mt

8/26/86). — No. 87

V – amp – Rio – Volts – H.P. – H.P. E.C.W.

189 – 75 – 146 – .5625 – 911 – 146. = 16.3

140 – 1.04 – 134 – 6950 – 5.12 – 410 = 80

act 30 60

op – min – min

90 – 82 – 74

Minutes lasted 270

globe brown block.
More than usual for
the life – Clamps red
fit dead block –

87 Unmounted or undrilled –

J.T. Ott

2 pin heads Iodine –
put on pump with tube bet
phos tube & fall tube to
stop formation of Hg I in
tube. A hour and
& quick no blue no Rolo
Iodine all disappeared –
it is remarkable that from
the time of putting first plug
in until put the whole 150
Volts across not more than a
gun cap full of air showed
There was no after air Either
as in those lamps which show
more fumes of Iodine –
Beautiful Incandescence near
Clamps – filament unbroken
Clamps not dirty still clean
but very dull & reddish
whether deposit on inside part was
Clamps after part of it has cracked the part
Cracked off as white other not – again on
it coffee Sulphuric or acid flaged inside part

as it must have got — the crack
on close inspection the filament
although even is not very
shimmy probably it was not
so originally — The underneath
by transmitted light is brown
one of the clamps is chocolate
colored w. ochre color

98 — Unmounted undried
J. F. Ott

2 milligrams Iodide Potassium

Heated with Kerosene lamp

Everything thing same as
93 — works block same —

8/26/86 W4 98

V — amp — Ro — Filts — Lamp HP — C.P. HP @ C.P.
102 — 77 — 133 — .3475 — 9.50 — 152 — .16
132 — 112 — 118 — 6550 — 5.04 — 403 — .80

Sec 60 125
Ft min min
80 66 62

Minutes baston 255

Globeamy block
Clamp Clean
filament dead black

8/27/86 No. 94

75 – amp –	Ro –	Filb –	lamp	C.P			
				H.P.	H.P.	@	C.P
114 –	.74 –	154 –	3740 –	8.82 –	141	"	16
148 –	1.15 –	141 –	6885 –	4.79 –	383	"	80

act.
105 – min – min
90 – 78 – 60

This is 94
not 97

Minutes lasted 175

Only light Brown
No block – Clamp dirty
filament dirty block –

97 – Unwashed & undried

5 Milligrams Iodide Potassium

Heatwith Kerosene Lamp

Everything same as 93
in working or prospecte

8/26/86 No. 97

75 – amp –	Ro –	Filb –	lamp	C.P			
				H.P.	H.P.	@	C.P
103 –	.75 –	138 –	3425 –	9.64 –	134	"	16
132 –	1.07 –	124 –	6250 –	5.28 –	422	"	80

act.
105 – 60
min – 125 – min – 305 – min – 795 – min – 1131 – min – 1165 – min
90 – 74 – 65 – 44 – 33 – 25 – 80

Minutes lasted 1450.

Globe very black – filb black
Clamp clean

J.F.O'H

95

Unwashed – Undried

10 milligrammes Iodide Potassium

Heat with Kerosene lamp

Works exactly as in 93

Everything same

J.C.W.

9/26/26 No. 93

V – amp – Res – Filth – lamp C.P. H.P. HP @ C.P.
104 – .76 – 137 – 3500 – 9.43 – 151 " 16
136 – 1.15 – 118 – 6925 – 4.76 – 581 " 8

set 60 .125 – 505
off – mm – mm – mm
70 – 68 – 57 – 45

Minutes lasted 620.

Globe very "block" clamps
clean fit lead block

93. Unwashed undried

15 Milligram Iodide Potassium
heat with Kerosene Lamp
Blue in globe – large area
halo – clamps cleaned
appear to work regular
Except there is a surprising
small amount of gas comes
off at high or even low heat
not a gas cap full from the
1st peg – Worked it up
slowly peg by peg – reversed
Cannot get globe clear –
filament shining

8/28/86 No 88

V – amp – Ro. – Stilla – lamps e.p. 4.4 – 4.4 @ 0.0

106 – 77 – 138 – 8625 – 9.11 – 146 – 6.

137 – 107 – 128 – 6895 – 5.08 – 406 – 80

Stl – 20

P – min

Pa – 4

Q – 20 min. bright spot in center

Minutes heated 40.

Globe white filament
deadblack –
Clamps black.

88 – Unwashed & undried –
J.S.M.

put in about 10 mg Iodide K
then about 10 grams of
Phos Anhy in globe –
Some of phos + K9 come in.
Contact turned yellow –
think there is a chemical
reaction ~~for~~ may be ~~phos~~ K
PK + free Iodine – portion
of Phos Anhy + K9 dont touch
~~should be it with lamp~~
~~not heated~~ on heating
great reaction took place
probably globe came off
fell like clotted –
globe still browned – no
blue in globe or halo – vacuum
may not be perfect or in sealing
off there was some stuff in the
calibration – clamp dirty –
filament shining
easy

104 — Unworked J. F. Orr

about 10 mg phos only
in globe & 5 mg of Iodine
on No 12 pump with double
cup one containing nearest
lamp phos only other
Mercury — letter To absorb
Iodine & prevent it going
into fall tube —

Phos only nearly all melted
Iodine probably all went
in Cup as even Hatty that
didn't stop it & it went into
fall tube — probably all went
out of lamp or was absorbed
by phos only as it has a peculiar
Color — the globe was blue
& had halo — near clamp.
There is an indescence clamp
ridish filament incidentally
shining — globe slightly flushed
then Capton hole bad operation of —

8/26/96 1 No. 104

V - amp - Res - Watts - Lamp C.P. H.P. - H.P. @ C.P.

118 - .95 - 145 - 8910 - 8.44 - 135 .. 16

146 - 1.10 - 133 - 7125 - 4.63 - 070 . 80

out-
up
80.

Acc'd in 5 minutes.

Probe are Lamp
Dont Know No —
Made its one with
Godside K in —

8/27/96 No. 76

V - amp - Ohm - Watts - Lamp - 0.A
108 - .75 - 144 - 5600 - 9.75 - 1.44 @ C.P
190 - 108 - 150 - 6800 - 6.92 - 3.94 " 7.6
act. 40 90
exp - min - min
V - 76 - .66

Minutes lasted 190.

Clock & Lobe -
Clamps clean - Left
dead block -

76 - Unwashed - Undried -

about 10 c.c. Milligram
Bromide Potassium -

Scarcely any blue - slight
blue halo - scarcely any
air works off easily
globe faintly opalescent
clamps clear
filament showing -

J.S.M.

89 - Unworked - Undried

5 @ 7 Milligrams Bromide

Potassium -

102 — Unwashed + undried

5@7 Milligram Chloride
Copper —
Oxidized on pump —
Indirect heat Chloride
Enough ———

90 — Unmoistened Undried

10 @ 15 Milligrams Chloride

Copper —

Cone. but get it off too much chlorine —

Bested

8/27/86 No. 92

V - amp - Res - Watts - temp - G.P.
108 - .97 - 141 - 3690 - 8.94 - 144 - 11.6
138 - 1.06 - 130 - 4135 - 570 - 448 - 11.80

Sets 40 90
4p min min
80 80 72

minutes lasted 155

globe white brown
no black - almost opalescent
Cant see filts see Color

92 — Unworked - undried -
2@3 Milligrams Chlorde Copper
globe turns yellow
Chlorine Comes out
in great quantities +
destroys pump —
Can work it —
probably an infinitely
small quantity of
Chlor might work —
filments shining

J.T.W.

105 Undressed Unexposed

5@8 Milligrams Iodide Ammonium
Volatilizes badly globe
opaquely white-
filament / dead block

BUSTED.

94 — Unworked Unbroken —

10 Milligrammes Iodide Barium

No blue — no halo — scarcely any air comes off — works quick — globe faintly opalescent. Clamps dark —

Card for 94 is where 97 is

J. F. Ott

8/27/86. No. 101

V-amp-Res-Watts-Lamp C.P.
108-175-144-3583-921-148-@ C.P.
141-104-134-6508-503-406-" -16
Set 80
Hr min
80 68

Minutes lasted 80

Only brown deposit
Clamps clean
fil dead black-

101- unwashed undried

1. Milligram Chl Copper
heated to heat with Kerosene
detectives pump- a yellow
matter volatilizes
globe has slight yellow
tint clamps dirty
filament shiny

J. S. Otto

120 — dried & heated down stairs
~~Undamed unwashed~~

J. T. Mitt

Iodide Zinc

works. Every just heated slightly
by Kerosene but seems to
solidify stopped slight
opalescence globe white
fil shrunk —
Clamps: Ochre color.

8/27/96 No 120
v — amp — Res — Watts — temp 0.W. W.P. W.P. @ 0.1
110 — .76 — 145 — 8700 — 5.92 — 143 " 16
142 — .112 — 127 — 7050 — 4.64 — 874 " 80

set 66
up — 80
90 — 80

globe brown block
considerable for
short life — not
dead black clamps dim

Minutes lasted — 65

121 — Dried & heated downstairs
J. F. Mills

one pin head chlorid Cop —

Clear at first, then very blue
— globe no halo — removed
heated with Kerosene — very
little air change noticed

9/27/86		No. 121			
V — amp — Res —	Fitts —	Pumps O.D	H.P. — H.P @	B.P	
111 — .175 —	14F —	3695 —	8.95 —	193 "	26
193 — 1.0P —	133 —	6P95 —	6.P2 —	358 "	58

air 60
up — min
SV — 62

Mercury basket 105 —

Brown block in spots
Clamp clean fil deep brown

8/27/86 No 122

V = amp: Res - Watts - temp. ohs
97 - .89 - 140 - 2876 - 1648 - 184 - 86
126 - .98 - 125 - 5442 - 6.06 - 485 - 80

ref. 10.
7p - min
90 - 70

Minutes lasted 90

Brown block - fil
block

122 — Dried & heated down stairs
J. E. Ellis

Iodide Iron — 3 milligm
Considerable air — works
freely fil shiny —
slight brown tint —
Clamps dirty red —
no blue.

Dried & heated down stairs

123

J. E. W.

Iodide Cadmium

3 mg

just touched it with slight heat from Kerosene. Vaporized Exceedingly easy globe somewhat opalescent. Clamps ochre red no blue

filament strong

8/27/18 No 123

V. amp.	Res.	Watts	Lamp	W/C	C.P.	@	C.P.
103 -	.84 -	189 -	8875	-	9.71	-	14.4	"	16
124 -	1.04 -	128 -	6170	-	0.124	-	42.7	"	80

ast.	60	125	2.40	Brownish
of	min	min	min	block
50	72	60	5.4	Clamp dim
				filament black

Minutes lasted 4.95

8/27/86 No. 124

v – amp – Ro – Fitth – [illegible] c.i.
104 – 84 – 141 – 8420 – 965 – 154 " 16
186 – 106 – 129 – 6595 – 576 – 418 " 80

def. 60
sp. – min – min.
80 – 72 – 58.

Mumbo basket 410

124 – Dried & heated down slaves
J. F. Ith

Unalaked Lewis 20 milligrams
Clamps not very clean
reddish – felt – shows
very little blue – reversed
current, scarcely any
air – splashed vac
fd (vibrator) 3/4 inch

Scarcely any blackening
one blackened spot opposite
break –
Clamps reddish

125 – Dried & heated burn stains
J. S. Otto

8 Melgram Idiform

Valable as any Easy - scarcely any gas comes from - globe slightly tinted, clamp medium pd filament seems to have a Hydrogen deport or it has not been touched in slightly.

8/27/06 No. 125 –

V – amp – Res – Watts – Lamp	H.P.	H.P. @ C.P
114 – .46 – 150 – 3845 –	8.38 –	137 " .16
149 – .44 – 138 – 7125 –	4.63 –	370 " .80

set .66
up – .min
80 – 64

Opaque
Arch

Minutes failed 65 –
Arch

126 Heated & Dried downstairs

20 Mg Iodoform put in badly got all over floor — J. F. Witt.

7/27/26 No. 127

V – amp – Res – Filth – lamp 8.0 H.P. – 8.0 @ C.P.

105 – 74 – 142 – 3401 – 257 – 153 – 16

136 – 104 – 131 – 6238 – 529 – 923 + 50

cel – 30 – 110 – 470 – 700 – 1000 – 1195 – 1800

op – min – min – min – min – min – min – min

80 – 96 – 73 – 49 – 46 – 43 – 48 – 57

Minutes lasted 2 1/10

Bulb only yellow –

much white deposit near clamps

also a copper deposit

fil only deep brown

127 Healed + Dried 2 times

2 mg Idform –

didnt heat globe at all

heat of filament + Volatilized

it all up in neck clamps

unchanged – no Hydrocarbon

deposit + filament shrunk

straight – globe ~~clear~~

tinted slightly –

J. E. Ott

9/25/86 | No. 128 lamp: a.p.

V - amp - Res - Watts - H.P. - H.P. @ 0.10

100 - .71 - .141 - 3.141 - 10.52 - 104 - .16

130 - 100 - 130 - 5.737 - 5.74 - 439 : 8.0

@ 30 min.

121 - 1.33 - .91 - 9.078 - 4.00 - 5.41 : .116

set 30 60 110

up - min - min - min

80 - 116 - 96 - 66

Minutes lacked 175

Lamp brunish while almost opaque — Noticed downstairs top filament shining while other part filament black

128 (H + Dr. e) D.S.

4 Mag 9 d form J. S. Ebb

Not heated by known - all the Idform volatilized in neck of lamp by heat filament no blue or halo - no tendency melt. clamps unchanged filament extra shiny prob. by hydrocarbon deposit fil. strength. globe faintly heated — scarcely any gas comes off.

8/27/14 Bo 129

7 – amp –	Rs –	~~Ft lbs~~ –	lamps	H.P.	H.P. @ C.P.		
99 –	.70 –	101 –	3052 –	10.82 –	172	"	16
130 –	.40 –	130 –	5751 –	3.74 –	459	"	84

act – 30 110
up – min – min
80 – 70 – 60.

Minutes – barbell 140

Globe brownish black
Considerable for start
life clamps unchanged
fil not deadblack –

129 – Dried 14 Downstrs
J. F. H.

5 Mg Iodide C heated it
slight by Kerosene before
putting on pump. Indect
heat afterward –
Wh. easy holds but no
blue in globe – removed
Current. clamps
unchanged –
filament shrunk
globe slightly frosted
J. F.

9/25/06 No. 130.

V – amp – Ro – Filla – lamps C.P. H.P. M.P. @ 0.10
10 – 45 – 144 – 3583 – 9.21 – 147 " 16
140 – 107 – 131 – 6636 – 4.97 – 398 " 80

Sel No. 165
Inf – min – min
Pa – 74 – .55

Thumb tacked 165 –

Clear yellow – irredescent
fil blackens white deposit –
neck –

130 – J. Tilt

Dried, heated + cooled on Exhaust

Phos Anhy 10 grms – also tube of Id form – new pump –
Phos Anhy seems dry in hand
showing that Exhaustr does
work well – filament
seems oxidized while heating
at it on the pump – white
color in globe volatilized –
Phos all shrunk to viscous
mass – Id form
gives chemical reaction with
Phos Anhy + that the
explanation of small quantity
gas coming off – must
be from other dry
Materials such as Chloride Calc
Burnt Lime – ignited KO +
NaO – also with Chl Lime –
also fresh Chl Lime –
burned at 80 for about 1½
hours – globe – whitened + filament
burned –

131 Antiseptic - unwashed -

10 mg phos anhy to 1/2 X 1/2 inch tube filled with Iodiform. put in phos anhy got vigorous shaking great amount water - globe -

8/28/96 Hg 132

V	amp	Res	Hlb	lamp	Hlb	a.p.	Hlb	@	C.P.
100	.80	125	0.589	9.32		.149	"		16
130	1.12	116	0.457	0.11		.409	"		80

set 40 165 275
up — min — min — min
PO — 74 — 56 — 50

Thomson's Lecture 4.85

fil dull black ~~brown~~
yellowish black in globe
Clamps clean —
indescence in narrow part
globe —

132 — J. E. Pitts

No phos only in Cup —
heated & dried on Exhaustion Cooled
& taken off tube of Iodoform put in
globe has slight whitening.
filament was silvery but after
heating Iodoform decomposed &
large quantity gas came off
but this was quickly
absorbed by Hg in fall tube
fall tube Clearly — The Iodoform
Volatilizes into fall tube
before heating at ordinary
temperature — The filament
is shiny but has lost
the silvery appearance —

8/30/86 No 135

V	amp	Ro	Watts	Lumens	C.P. H.P.	@ C.P.
100	75	140	3500	9.03	.157	" 16
106	108	126	6360	9.08	.106	" 80

def 80
up - 100
80 - 76

Minimum Lasted 90.

Pure black - but
more than there should be
for short life - lamps
rather clean cut - look
like burnt copper - fil
black -

133 — J. S. Mills

Lamp put on drier & heated
then put quickly after it was
nearly cold on No 13 pump - this
pump had previously 9 lb form & phos
acid was little viscous on top
allowed it to run to solid tube
and then didn't touch it for
20 minutes put in first peg
run this way for 10 minutes
then in 10 seconds run it up
to 80 @ 100 candles for nearly
full peg - and then for an
seconds time closed it at 80
@ 100 cp very little air came
off at high exhaust lamps are still
dull red [illegible] hot after
working this way [illegible] 20 to 30 times
during 10 minutes [illegible]
[illegible] bright [illegible]
lamps [illegible]

8/30/80 No 13 c

V - amp - Res. - Lith - lamp a.p. No. wire @ a.p.
117 - 95 - 143 - 3380 - 927 - 148 " 16
138 - 108 - 128 - 6600 - 5.00 - 900 " 80

ref 30 90 305
np - min - min - min
Pd - 80 - 64 - 43

Minutes burned 330.

Very black for life
fil dead black clamps
Clean

134 - Lamp Ordered
J. F. Otto

Put on pump with no
phos anhydride in cup
globe very blue let it
Burn for hour after
working high air in very
fine bubbles kept coming
off continuously globe
clear - filament considerably
Browned clamps
most beautifully clean
never saw them so clean

135 - Cleaned & washed regular
Bichromate + SO4 -
rinsed then solution
Chloride Zinc poured in
then put on Exhaustr +
dried - put on pumps +
Exhausted regular way
heat + heat both Kroma
filament bright - globe
slightly browned -
Clips clean -

8/24/96 | No 135
V - amp Ra - Hlb - Pump Hlb - Ci
103. - 76 - 136 - 3475 - 938 - 152 " 16
134 - 112 - 120 - 6650 - 4.96 - 897 . 80
cif 30. 50 305
vf - min - min - min
fv - 74 - 63 - 48

Minutes lasted 6/3.

Rather black - black ring on
globe near clamps - clamps clean
fil dead black

136 — Dried on exhauster - put on Cup containing only burnt lime — air kept coming out for hour & 1/2 five pumps heads couldt get Vacuum filament badly browned globe clear — Clamps clean —

9/30/26 No. 136

V	amp.	Ro	Watts	Amp. Hrs	Amp. Hrs @ C.10
109	8.1	154	3425	9.64	154 " 16
142	4.05	136	6620	4.88	378 " 50

Rel
mp
80 —

baked 20 minutes

globe clear — fil browned
Clamps beautifully clean

137 — J. F. Otto

unwashed undried;

Fine ferrocyanide K — globe

treated by Kerosene Exhausted

quick put on cord + shaken

while at 80 cp so ferrocyanide

would touch + coat filament

with KO —

8/30/86 132/137 lamps 0.2

r — amp — 2.0 — 7 Ohms — 2.2 — 2.2 @ 0.2

109 — 13 — 143 — 3370 — 9.79 — 137 " 16

134 — 104 — 129 — 6175 — 5.34 — 127 " 80

set

cp

80 —

Minutes lasted 23.

Bulb clear fil shrunk

one clump cloud other dirty

9/30/86 No. 138

V – amp – Res – Watts – Lamp 0.P. 14.P. – 14.P. @ 0.P.

103 – .73 – 142 – .5375 – 9.90 – 138 " 16

132 – 1.02 – 130 – .5970 – 5.53 – 142 " 50

Set 50 150

mp – min – mins

80 – 78 – 62

Minutes Burnt 260

globe yellow – fil brown – Clamps clean

138 Unwashed, Undried –

Chloride Aluminum – heated by Kerosen Chlorine Come off & great deal water – dirtied pump badly. finally got vac. sealed off & put on Card & shook lamp to get aluminum in Carbon with filament which about 100 cp – globe rather clear filament little browned.

J. F. Ott

39 — Unwashed undried

J. F. Ult

Fluoride deposit in globe
heated & treated as ~~[illegible]~~
37 & 38 — filament blackened
or rather browned —

| 1930/86 | | |

140 Unwashed & Undried
J. S. Th

Oxide Aluminum in globe
worked same as 137
& 138 —

8/31/P6 No. 140
V - amp - Res - Hth - Lumps Hth - C.P. H.P. @ C.P.
96 - 48 - 123 - 5230 - 10.15 - 162 " . 16
125 - 108 - 116 - 8495 - 5.51 - 441 " 80

act 50 190 370
ap - min - min + min
p 68 - 50 - . 38

Minutes - lasted 700

globe faintly tinted black
Aluminum clings to side
of globe & make it white
~~for~~ black - al powder darkened

141 — Unwashed Undried

Silicic acid (IV) oxide

Silicon — Same as

1374136 — J. S. Ott

8/30/86 No 141

V - amp - Ro - Ztlb - Lamp a.p. 4 Hz 4.2 @ a.p.

107 - 4/4 - 145 - 3320 - 258 - 150 " 16

138 - 116 - 131 - 6475 - 510 - 408 " 80

ref. 50 180

up - [illegible] min

50 - 80 - 54

Mineral - Lasbet 210

globe little block fol
dead block clamps
clean.

9/7/86 No 142

V	amp.	Res.	Watts	Lamp	a.p.
95.	.77	124	8250	10.15	162 .16
124	1.06	117	3825	5.66	483 .80

act	40	140	240	375	575	675
ap	min	min	min	min	min	min
90	74	66	58	46	43	38

Minutes baked 85 C

Yellowish black —
less than unwashed
full black — clamps clean

142 — Unwashed undried
J. F. Ott

Telephone Lampblack soaked in gasoline & then forced through neck of Exhaust tube in pump in cylinders — Lamp put on 13 pump worked without heating Lampblack probably heat of filament brought down HC out filament steel shiny after getting tube solid & removed. Current heated Lampblack with Kerosene Lamp — Exhausted to clean tube & run filament up got clean tube allowed Lamp run at 40 C for 10 minutes sealed off — clamps show decided tendency melt. Clean — globe clear —

143 —

Same as 142 — fil[illegible]
shiny on one side very
dull brown on other
Everything else same as 142

J. F. Otto

9/7/86 #143

V - amp - Rs - Filts -	Lamp - W.R.	C.P. - W.P.@C.P.
104 - .65 - 160 - 3000 -	11.00 -	176 ÷ 16
137 - .93 - 148 - 5650 -	5.84 -	467 ÷ 80

set 40
up - min
80 - 70

Minutes lasted 105

oxesed coffil shiny other dead
black broke on Dead black
side - clange clean [illegible] about
right amount blackening for life -

144 —

Same as 142 — Cut Lamp
Clock heated by Kerosene
before working lamp
Clamp clean globe clean
one side fol shiny other
side very brown J. F. Ott

9/7/98 No. 144

V. amp.	Res.	Watts	Lamp H.P.	C.P. H.P.	@ C.P.
104	70	149	3.225	10.23	164 .. 16
135	1.03	132	6.125	8.35	428 .. 80

act.
ref
80.

Ac'd in 15 min.
Lamp broke till to pieces.

145 —

Same as 144 —
one side fil not so browned

J. F. Otto

9/7/86 No. 145

V - amp - Res - Filts - Pants O.P
W.R. - U.R. @ C.P.

107 - 73 - 147 - 3465 - 205 - 158 " 76

138 - 105 - 130 - 6425 - 5.14 - 411 " 80

21/- 40 140
16/ - min - min.
80 - 75 - 56

Thumb's Cassick 2.40

Globe darker than shaved be
Clamp clean - fil dead
block.

146 —

Same as 142 —

film — not very shiny

arcd —

9/7/86 No. 146

V - amp - Ro - Filts - temps 0.2 - 42.12 - 42A @ (C.)

106 - .72 - 14P - 3875 - 9.7P - 137 - .76

137 - 1.03 - 133 - 6250 - 5.2P - 42.2 .. 80

acf -

ap -

PD -

Arcd in 15 min.

J. F. Ult

9/7/86 No. 147.

v	amp	ko	Watts	lamp W.H.	C.P. W.H. @ 0.25
108	.70	105	3330	9.85	133 .16
142	.100	142	6290	5.25	420 .80

pit	.40	140	240
up	min	min	min
80	83	54	52

Minutes lasted 245

fil dabblock globe blocken
then I shaved off Clamps
are clean other little dirty

147 — Unwashed Undriol —
J. T. Mc

1/4 Thimbleful Telephone Lamp black —
heated with Kerosene while on pump +
few inches of Vacuum — Enormous
amount of water Comes off also
great deal ~~gas~~ fixed gases —
after heating strongly nearly up to
melting point glass + getting soft
tube worked Lamps up slowly peg
by peg — reversed Current —
Clamps at certain C.P. get white
hot + globe very blue with Hg
after getting up slowly to 20 cp
or 30 — then run up rather quickly
allowed Lamp to burn at say
25 cp for 1/2 hour to get high
Vacuum —
filament somewhat Brown l
globe sucked in little
Clamps very clean Vac good
globe clear Lamp black dont stick

148

Same as 147 –

one clamp clean other dirty
globe clean fil bright –

9/7/06 Reg 48

V –	amp –	Res –	Watts –	Lamp C.P. H.P.	H.P. @ C.P.
108 –	.65 –	159 –	3250 –	10.15 –	162 " 16
121 –	1.11 –	140 –	6350 –	5.24 –	419 " 80

Fact – 40
up – min
80 – 70

Minutes lasted 45

globe blacker than at night
to 6½ fil Browned all over –
clamps clean – J.F.D.H.

149

Same as 147 —
globe clean clamps
very clean fil very
shining

150

Same as as 147 —
globe clean clamps
clean fil shunny —

151

Same as 147 — but on long contraction on Hg pump
globe clear · clamps dirty · fil showing

9/7/00 1 No 151

V — as up — Rho — Filts — Bunks O.S. H.P. H.P. @ O.S.
107 — 42 — 149 — 3420 — 9.65 — 154 " 16
140 — 104 — 139 — 6450 — 5.12 — 410 " 80

pel — 40 140 240 375 575
ry — min min min min min
80 — 67 — 54 — 42 — 36 — 34

Mercury backed 600°

globe too block for life
Clamps dirty fil
Drdblock — J.T. Ott

152 — J. F. Ellis

Same as 147 —
globe clear — clamp
not very clean — fil
shrunk

1/7/86 No. 152
V — amp — Res — Filbs — lamp H.P. — Oil H.P. @ 0.0
102 — .74 — 138 — 0350 — 9.85 — 138 — 16
182 — 106 — 125 — 6200 — 6.32 — 426 — 50

Ref — 40 — 140 — 240 — 375
up — min — min — min — min.
80 — 78 — 61 — 48 — 38

Number Packed 420

Lamp bulb rather dark for the life — clamps dirty

9/7/86 No 153

V – amp – Res. – Watts – lamp – C.P. – W.P. – W.P. @ C.P.
100 – 81 – 124 – 8595 – 9.18 – 197 – 16
130 – 118 – 110 – 6800 – 4.85 – 388 – 80

act – 46 – 120 – 275
cp – min – min – min
80 – 80 – 66 – 54

Thumb tacked 3.30

fil black. clamp clean
globe usual block

153 – unmounted and dried –

Thumbleful Edisonian Lamp Clock
in order like

J.F. Ott

Heated with Kerosene lamp very hot –
pegged up slowly – reversed current
ran them over 2 hours below 10 cp –
run rather quick up to high cp –
work easy –
clamps clean fil shiny
globe clean

154 —

Same as 153.
fil shing globe clean.
Clamp, clean

J. F. Ult

155

Same as 153

fil shiny one clamp
clean other head colored
globe clean fil
distorted & nearly
touching glass

J. F. Ulitt

9/7/86 No. 155

V – amp – Res – Watts – lamps. C.P. – W/C – W/C @ C.P.
104 – .72 – 145 – .3320 – 9.94 – 139 .. 16
135 – 105 – 129 – 62.95 – 0.24 – 419 . 80

act 40 120 275 .
eff – min – min – min
80 – 82 – 85 – 5.2

Minutes lasted 280.

fil brown black – globe too black
for life – one clamp clean
other dirty

156 —

Same as 153
globe clear fol shiny
clamps clear

157

Same as 153

globe clear fil
chimney clean
clean J. F. Webb

9/7/86 11½ 157

V amp. Rec. 7 lb. - lamp 6.2 C.P. 4.2 W.P. @ C.P.

100 - .76 - 132 - 8362 - 9.82 - 157 " 16

131 - 1.12 - 117 - 6500 - 5.08 - 406 " 80

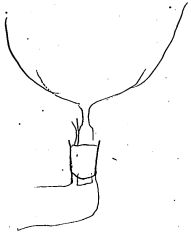
alt. V.C. 120 275
ref. min - min - min
80 - 80 - 52 - 42

Mounted - labled 530

Very black -
Cleaned clean
fil black.

156

Same as 153



139
185
1112
1112
139
261 32

13
25
65

13

1185
13
3555
1185
1520.05